

REMARKS

Reconsideration is requested.

Claims 1, 6-8, 10, 13-16, 21, 23, 25 and 28-30 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,303,591 to Dykes et al. in view of U.S. Patent No. 6,570,097 to Monde et al.

Claim 1 recites ultrasonic pulser-receiver circuitry, for use with an ultrasonic transducer, the circuitry comprising a circuit board; ultrasonic pulser circuitry supported by the circuit board and configured to be coupled to an ultrasonic transducer and to cause the ultrasonic transducer to emit an ultrasonic output pulse; receiver circuitry supported by the circuit board, coupled to the pulser circuitry, including protection circuitry configured to protect against the ultrasonic pulse and including amplifier circuitry configured to amplify an echo, received back by the transducer, of the output pulse; and a connector, proximate an end of the circuit board, configured to couple the ultrasonic transducer directly to the circuit board, to the pulser circuitry and receiver circuitry, wherein impedance mismatches that would result if the transducer was coupled to the circuit board via a cable can be avoided.

The Dykes et al. reference fails to disclose a connector configured to couple the ultrasonic transducer directly to the circuit board, to the pulser circuitry and receiver circuitry, wherein impedance mismatches that would result if the transducer was coupled to the circuit board via a cable can be avoided.

It would not be obvious to combine the Monde et al. reference with the Dykes et al. reference because there is no teaching in the references which would suggest their combination. It would not

be obvious to substitute the structure of Monde et al. for portions of the structure of Dykes et al. because there is no teaching in the references themselves of how the components should be combined. The mere fact that the structures of the references could possibly be somehow modified to result in the claimed structure does not render the claimed structure obvious unless the references themselves suggest the desirability of the modification. Monde et al. are not at all concerned with ultrasonic pulser-receiver circuitry. Indeed, Monde et al. state that “The connector of the present invention may be either of the type where it is mounted directly to a substrate or of the type where it is connected to a cable.” If one of ordinary skill in the art were to combine Monde et al. with Dykes et al., they could still use a cable, and thus not solve the problem solved by Applicant.

Nothing in Monde et al. suggests using the Monde et al. connector to couple an ultrasonic transducer to a circuit board. Monde et al. instead disclose that “The connector can be used for various applications such as interconnection between a plurality of circuit boards, interconnection between a plurality of devices, interconnection between connectors and circuit boards, interconnection between connectors, and integrated circuit sockets such as CPU sockets.” There is no disclosure of using the Monde et al. connector to connect an ultrasonic transducer to a circuit board or even a generic component to a circuit board.

Further, claim 1 has been amended to recite that the connector is proximate an end of the circuit board. Support can be found in paragraph [0023] of the originally filed specification. Even if Monde et al. could be combined with Dykes et al, nothing in Monde et al. suggests where on a circuit board a connector should be located.

Therefore, claim 1 is allowable.

As claims 2-15 depend on claim 1, they too are allowable.

Claim 16 recites ultrasonic pulser-receiver circuitry, for use with an ultrasonic transducer, the circuitry comprising a circuit board; ultrasonic pulser circuitry supported by the circuit board and configured to be coupled to an ultrasonic transducer and to cause the ultrasonic transducer to emit an ultrasonic output pulse, the pulser circuitry including an input configured to receive an input pulse from an external source, an input trigger amplifier coupled to the input, a trigger driver coupled to the trigger amplifier, a transistor coupled to the trigger amplifier, and circuitry, including a discharge capacitor and charging and discharging diodes, coupled to the transistor; receiver circuitry supported by the circuit board, coupled to the pulser circuitry, including protection circuitry configured to protect against the ultrasonic pulse and including amplifier circuitry configured to amplify an echo, received back by the transducer, of the output pulse; and a connector configured to couple the ultrasonic transducer directly to the circuit board, to the pulser circuitry and receiver circuitry, wherein impedance mismatches that would result if the transducer was coupled to the circuit board via a cable can be avoided.

The Dykes et al. reference fails to disclose a connector configured to couple the ultrasonic transducer directly to the circuit board, to the pulser circuitry and receiver circuitry.

It would not be proper to combine the Monde et al. reference with the Dykes et al. reference because there is no teaching in the references which would suggest their combination. It would not be obvious to substitute the structure of Monde et al. for portions of the structure of Dykes et al. because there is no teaching in the references themselves of how the components should be

combined. Further, even if the references could be combined, the combination would fail to disclose a common connector coupling an ultrasonic transducer to both pulser circuitry and receiver circuitry.

Therefore, claim 16 is allowable.

As claims 17-30 depend on claim 16, they too are allowable.

Claims 31, 34, 36, 38 and 41-43 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,303,591 to Dykes et al. in view of U.S. Patent No. 3,201,612 to Amodei.

Claim 31 recites an ultrasonic pulser-receiver comprising an ultrasonic transducer; a circuit board; ultrasonic pulser circuitry supported by the circuit board and coupled to the ultrasonic transducer to selectively cause the ultrasonic transducer to emit an ultrasonic output pulse, the pulser circuitry including an input configured to receive an input pulse from an external computer, input trigger amplifier circuitry coupled to the input, a trigger driver coupled to the input trigger amplifier circuitry, a high power transistor coupled to the trigger amplifier, and a discharge capacitor and charging and discharging diodes coupled to the transistor; and receiver circuitry supported by the circuit board, coupled to the pulser circuitry, including protection circuitry configured to protect against the ultrasonic pulse and including amplifier circuitry configured to amplify an echo, received back by the transducer, of the output pulse, the ultrasonic pulser-receiver, in operation having a rise time of less than 1 nanosecond.

It would not be obvious to combine the Amodei reference with the Dykes et al. reference because a) there is no teaching in the references which would suggest their combination, and b) even if they were somehow combined, they do not produce the structure claimed. It would not be obvious

to substitute a portion of the structure of Amodei for portions of the structure of Dykes et al. because there is no teaching in the references themselves of how the components should be combined or of which components of Amodei should be selected and combined with which components of Dykes et al. There are no teachings in the references themselves which teach that there would be any advantage resulting from selecting portions of the structure of Amodei and integrating that structure somehow into the structure of Dykes et al. The mere fact that the structures of the references could possibly be somehow modified to result in the claimed structure does not render the claimed structure obvious unless the references themselves suggest the desirability of the modification.

If one of ordinary skill in the art were given Amodei and Dykes et al., they would not even realize that it is desirable to produce rise time of less than 1 nanosecond absent Applicant's disclosure. Amodei discloses a pulse generator and is not concerned with the field of ultrasonics or non-destructive testing.

Given only Amodei and Dykes et al., if it were possible to combine them, one of ordinary skill in the art would perhaps want to couple a tuning transmission line across a storage diode, as taught by Amodei et al. However, it would not be clear which of the diodes in Dykes et al. should have a tuning transmission line coupled across it or whether a new diode should be added. If a new diode should be added, it is not clear where it should be placed.

Even if the references were combined, the combination would fail to include an input configured to receive an input pulse from an external computer, as required by claim 31. The term "computer" does not appear anywhere in Dykes et al.

Therefore, claim 31 is allowable.

As claims 32-43 depend on claim 31, they too are allowable.

New claim 44 has been added. Favorable consideration of the new claim is requested.

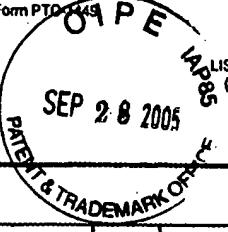
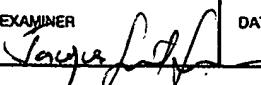
Copies of the PTO-1449 forms as initialed by the Examiner were attached to the instant Office Action. However, it appears that the references listed on sheets 3/5 and 4/5 were not initialed by the Examiner. Applicant appreciates the Examiner's review and consideration of the previously submitted references, and respectfully requests that the Examiner initial the attached copies of the previously filed PTO-1449 Sheets 3/5 and 4/5, which were attached to the Information Disclosure Statement as filed with this application.

In view of the foregoing, allowance of claims 1-44 is requested. This application is believed to be in immediate condition for allowance, and action to that end is requested. Should the next Action be anything other than a Notice of Allowance, a telephonic interview is requested.

Respectfully submitted,

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Form PTO-1449  <b>U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE</b> LIST OF ART CITED BY APPLICANT (Use several sheets if necessary)					ATTY. DOCKET NO. B-369	SERIAL NO. Filed Herewith	
					APPLICANT Steven C. Taylor		
					FILING DATE Filed Herewith	GROUP Unassigned	
					U.S. PATENT DOCUMENTS		
*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	AA						
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FOREIGN PATENT DOCUMENTS							
		Document Number	Date	Country	Class	Subclass	Translation
							Yes
	AM						No
	AN						
	AO						
	AP						
	AQ						
OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, Etc.)							
	AR		<a href="http://www.gepower.com/dhtml/panametrics/en_us/products/pulse_receivers/5800pr_pulse">http://www.gepower.com/dhtml/panametrics/en_us/products/pulse_receivers/5800pr_pulse</a> GE Power Systems, GE Panametrics, "5800PR Pulser-Receiver", 1 page (10/2/2003)				
	AS		<a href="http://www.gepower.com/dhtml/panametrics/en_us/products/pulse_receivers/5900pr_pulse">http://www.gepower.com/dhtml/panametrics/en_us/products/pulse_receivers/5900pr_pulse</a> GE Power Systems, GE Panametrics, "5900PR Pulser-Receiver", 2 pages (10/2/2003)				
	AT		<a href="http://www.gepower.com/dhtml/panametrics/en_us/products/pulse_receivers/5910pr_pulse">http://www.gepower.com/dhtml/panametrics/en_us/products/pulse_receivers/5910pr_pulse</a> GE Power Systems, GE Panametrics, "5910PR Pulser-Receiver", 2 pages (10/2/2003)				
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*Examiner Initial		Document Number	Date	Name		Class	Subclass	Filing Date If Appropriate
	AA							
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	AN							
	AO							
	AP							
	AO							
<b>OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)</b>								
	AR		<a href="http://www.qepower.com/dhtml/panometrics/en_us/products/pulser_receivers/5072pr_pulse">http://www.qepower.com/dhtml/panometrics/en_us/products/pulser_receivers/5072pr_pulse</a> GE Power Systems, GE Panametrics, "5072PR Pulser-Receiver", 1 page (10/2/2003)					
	AS		<a href="http://www.qepower.com/dhtml/panometrics/en_us/products/pulser_receivers/5073pr_pulse">http://www.qepower.com/dhtml/panometrics/en_us/products/pulser_receivers/5073pr_pulse</a> GE Power Systems, GE Panametrics, "5073PR Pulser-Receiver", 2 pages (10/2/2003)					
	AT		<a href="http://www.qepower.com/dhtml/panometrics/en_us/products/pulser_receivers/5077pr_ultra">http://www.qepower.com/dhtml/panometrics/en_us/products/pulser_receivers/5077pr_ultra</a> GE Power Systems, GE Panametrics, "5077PR Ultrasonic Square Wave Pulser-Receiver", 1 page (10/2/2003)					
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